

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces and supersedes all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-11 (Cancelled).

12. (Previously Presented) Sensor assembly for determining the condition of a structure, especially for confirming if a measured fingerprint is on a live finger, by measuring characteristics of close to the structure surface, the sensor comprising:

a current source;

at least four electrodes at chosen positions relative to each other, said positions providing at least two relative distances between the electrodes, wherein a chosen first pair of said at least four electrodes constitutes current supply electrodes, and a chosen second pair of said at least four electrodes constitutes pickup electrodes, and of which at least one does not constitute a current supply electrode;

a measuring instrument coupled to said at least four electrodes for measuring the impedance between said chosen pair of pickup electrodes for providing a value characterizing the structure;

wherein said sensor is adapted to store a predetermined set of values characterising a chosen condition for said structure;

wherein said sensor is adapted to compare said characteristics from each of said at least one pair of pickup electrodes with said set of predetermined values for detecting if said structure is in a certain condition, and the sensor assembly is adapted to alternating coupling of at least one current supply and measuring instrument to different electrode pairs with different distances between them, for measuring characteristic values at different depths in said structure; and

wherein the supplied current is oscillating within a chosen frequency range and said sensor is adapted to measure the impedance at each pickup electrode and to compare the imaginary and real parts of the impedance signals as functions of the applied frequency, by determining the slope of the resulting curve, and to compare this slope with a predetermined set of slopes indicating a live finger.

13. (Previously Presented) Sensor assembly for determining the condition of a structure, especially for confirming if a measured fingerprint is on a live finger, by measuring characteristics of close to the structure surface, the sensor comprising:

a current source;

at least four electrodes at chosen positions relative to each other, said positions providing at least two relative distances between the electrodes, wherein a chosen first pair of said at least four electrodes constitutes current supply electrodes, and a chosen second pair of said at least four electrodes constitutes pickup electrodes, and of which at least one does not constitute a current supply electrode;

a measuring instrument coupled to said at least four electrodes for measuring the impedance between said chosen pair of pickup electrodes for providing a value characterizing the structure;

wherein said sensor is adapted to store a predetermined set of values characterising a chosen condition for said structure;

wherein said sensor is adapted to compare said characteristics from each of said at least one pair of pickup electrodes with said set of predetermined values for detecting if said structure is in a certain condition, and the sensor assembly is adapted to alternating coupling of at least one current supply and measuring instrument to different electrode pairs with different distances between them, for measuring characteristic values at different depths in said structure; and

wherein the pickup electrodes are constituted by sensor elements in a fingerprint sensor array.

14. (New) Sensor assembly for determining the condition of a structure so as to confirm whether the structure is constituted by skin and living tissue, the sensor assembly comprising:

at least four electrodes, of which

at least two electrodes constitute current supply electrodes which are connected to a current source for providing a current or voltage to said structure, and

at least two electrodes constitute pickup electrodes of which at least a first pickup electrode is connected to a measuring instrument for measuring at least one parameter value relating to the impedance of the structure; and

wherein said sensor assembly is adapted to alter which electrodes constitute current supply electrodes and/or which electrodes constitute pickup electrodes between different

measurements so as to alter the distance(s) between the current supply electrodes and/or the pickup electrodes to thereby alter the depths of the structure at which the measurements are performed; and

wherein said sensor assembly is further adapted to (1) store a predetermined set of values characteristic of at least one certain condition of the structure, and (2) compare the at least one measured parameter value with the predetermined set of values for determining whether the structure is in said certain condition, and wherein the distance between a first of said current supply electrodes and said first pickup electrode is less than 1mm.

15. (New) Sensor assembly for determining the condition of a structure so as to confirm whether the structure is constituted by skin and living tissue, the sensor assembly comprising:
at least four electrodes, of which

at least two electrodes constitute current supply electrodes which are connected to a current source for providing a current or voltage to said structure, and

at least two electrodes constitute pickup electrodes of which at least a first pickup electrode is connected to a measuring instrument for measuring at least one parameter value relating to the impedance of the structure; and

wherein said sensor assembly is adapted to alter which electrodes constitute current supply electrodes and/or which electrodes constitute pickup electrodes between different measurements so as to alter the distance(s) between the current supply electrodes and/or the pickup electrodes to thereby alter the depths of the structure at which the measurements are performed; and

wherein said sensor assembly is further adapted to (1) store a predetermined set of values characteristic of at least one certain condition of the structure, and (2) compare the at least one measured parameter value with the predetermined set of values for determining whether the structure is in said certain condition, and wherein said sensor assembly is further adapted to interchange the roles of the electrodes such that the roles of the pickup and supply electrodes may change sequentially for varying the relative positions between the sensors and thus the measured characteristics of the surface, and wherein said sensor assembly is further adapted to measure the phase of the signal at each pickup electrode, and to compare the distance between the pick up and supply electrode at chosen frequencies with the corresponding phase of the signal, and to compare these parameters with a predetermined set indicating a live finger.